

**STATEMENT OF WORK
FOR THE
EAST HELENA SUPPLEMENTAL ENVIRONMENTAL PROJECT
CONSENT DECREE CIVIL ACTION NO. CV 98-3-H-CCL**

**REVISED
DRAFT**
December 21, 1998

Prepared for:

ASARCO Incorporated
P.O. Box 1230
East Helena, Montana 59635

Prepared by:

Hydrometrics, Inc.
2727 Airport Road
Helena, Montana 59601

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TABLE OF CONTENTS

	<u>Page</u>
LIST OF TABLES.....	iii
LIST OF FIGURES	iii
LIST OF ATTACHMENTS	iv
1. INTRODUCTION.....	1-1
1.1 PURPOSE.....	1-1
1.2 DESCRIPTION AND SITE HISTORY	1-1
1.3 ASARCO 1997 ENHANCEMENTS INITIATIVE.....	1-2
1.4 PERFORMANCE OBJECTIVES	1-4
1.4.1 SEP Performance Objectives	1-5
1.4.1.1 Additional Asarco Enhancement Initiatives	1-6
1.5 SCOPE OF WORK.....	1-6
1.5.1 Riparian Area Enhancements Scope of Work	1-6
1.5.2 Upland Area Enhancement Scope of Work	1-9
2. DESCRIPTION OF DESIGN AND CONSTRUCTION ACTIVITIES	2-1
2.1 RIPARIAN AREA ENHANCEMENTS	2-1
2.1.1 Earthwork and Shoreline Improvements	2-2
2.1.2 Revegetation of Shoreline Areas	2-4
2.1.3 Site Water Control Improvements	2-6
2.1.4 Visual and Physical Screen	2-7
2.2 UPLAND AREA ENHANCEMENTS	2-7
2.2.1 Earthwork and Upland Improvements	2-8
2.2.2 Revegetation of Upland Areas	2-8
2.2.3 Visual and Physical Screen	2-10
3. METHODOLOGY FOR DETERMINING SUCCESS OF PROJECT	3-1
4. MONITORING AND REPORTING	4-1
5. PROJECT SCHEDULE	5-1
6. REFERENCES.....	6-1

LIST OF TABLES

	<u>Page</u>
TABLE 2-1. COVERSOIL SUITABILITY CRITERIA	2-4
TABLE 2-2. RIPARIAN HABITATS AND VEGETATION SPECIES OBSERVED IN THE UPPER LAKE AREA, JANUARY 1997	2-5
TABLE 2-3. ADDITIONAL NATIVE PLANT SPECIES PROPOSED FOR ESTABLISHMENT IN UPPER AND LOWER LAKE RIPARIAN HABITATS	2-6
TABLE 2-4. UPLAND HABITAT AND VEGETATION SPECIES OBSERVED IN THE EAST HELENA AREA, JANUARY 1997	2-9
TABLE 2-5. ADDITIONAL NATIVE PLANT SPECIES PROPOSED FOR UPLAND HABITAT ESTABLISHMENT IN THE AREA BETWEEN UPPER AND LOWER LAKES	2-9
TABLE 5-1. SUPPLEMENTAL ENVIRONMENTAL PROJECT SCHEDULE	5-1

LIST OF FIGURES

	<u>Page</u>
FIGURE 1-1. SITE LOCATION (DRAWING NO. 87198A02.DWG)	1-3
FIGURE 1-2. RIPARIAN AREA ENHANCEMENTS (DRAWING NO. 87198A04.DWG)	1-8
FIGURE 1-3. UPLAND AREA ENHANCEMENTS (DRAWING NO. 87198A05.DWG)	1-10
FIGURE 2-1. EARTHWORK AND SHORELINE IMPROVEMENTS ON LOWER LAKE (DRAWING NO. 87198A07.DWG)	2-3

LIST OF ATTACHMENTS

ATTACHMENT 1 DATA COLLECTION PLAN

ATTACHMENT 2 HEALTH AND SAFETY PLAN

**STATEMENT OF WORK
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EAST HELENA SUPPLEMENTAL ENVIRONMENTAL PROJECT
CONSENT DECREE CIVIL ACTION NO. CV 98-3-H-CCL**

1. INTRODUCTION

1.1 PURPOSE

This document sets forth the Statement of Work (SOW) for implementing the East Helena Supplemental Environmental Project (SEP). Work will be conducted at the Asarco East Helena Plant (herein referred to as the "Asarco plant" or "the plant") located in East Helena, Montana in accordance with the RCRA Corrective Action Work Plan. This work will be performed in accordance with Consent Decree, Civil Action No. CV 98-3-H-CCL (Effective Date May 5, 1998). The purpose of this SOW is to:

- Define the scope of work which incorporates applicable requirements of the Consent Decree, including Section VIII (East Helena Supplemental Environmental Project), Section XI (Reporting) and Exhibit 2 (SEP Plan);
- Propose a schedule for completion of the SEP.

1.2 DESCRIPTION AND SITE HISTORY

The Asarco plant was constructed in 1888 by the Helena and Livingston Smelting and Reduction Company for the purpose of processing ores from local mines. In 1899, the American Smelting and Refining Company, today's ASARCO Incorporated, was formed with the East Helena Smelter being one of the original units. The Asarco plant now serves as a custom, primary lead smelter which produces lead bullion from a variety of both foreign and domestic concentrates, ores, fluxes, and other non-ferrous metal-bearing materials. In

addition to the production of lead bullion, the plant also produces a copper by-product and sulfuric acid. The plant recovered zinc until October 1982.

As shown in Figure 1-1, the Asarco plant is located immediately south of the City of East Helena, Montana. Prickly Pear Creek forms the eastern boundary of the plant and flows north through the community of East Helena, the Helena Valley, and into Lake Helena. Prickly Pear Creek is the primary source of water for Upper Lake, a small body of water adjacent to the south side of the plant. A small diversion structure at the southeast corner of the plant diverts water from Prickly Pear Creek into Upper Lake. Lower Lake is located at the Asarco plant, just north of Upper Lake.

Lower Lake historically served as the major holding facility for plant water. In 1989, two one-million gallon steel tanks replaced Lower Lake as a storage site for plant water. Sludge, sediments, and marsh deposits were dredged from the lake between May 1994 and August 1996. In 1997, a curb and gutter were added along the west end of Lower Lake to maintain positive drainage away from the lake. A Montana Pollution Discharge Elimination System (MPDES) permit obtained in November 1996 and modified November 1997 authorizes the discharge of High Density Sludge (HDS) water treatment plant effluent to Lower Lake. Since Lower Lake is no longer used for plant water storage, Asarco proposes to improve the environment in and around the lake as part of the SEP.

1.3 ASARCO 1997 ENHANCEMENTS INITIATIVE

Acting under its own initiative in 1997 before the Consent Decree, Asarco enhanced the west end of Lower Lake during construction of the stormwater diversion curb by adding fill to further separate a plant service road from the lake. This fill was graded, planted and fenced to create a protected grassy shoreline embankment with trees and shrubs that will



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EAST HELENA PLANT
SUPPLEMENTAL ENVIRONMENTAL PROJECT
STATEMENT OF WORK

SITE LOCATION MAP

FIGURE

1-1



screen the lake from the Asarco plant area. The 1997 Lower Lake enhancements included:

- Demolition of two abandoned drain pipe outlets to Lower Lake;
- Demolition and patching of pavement depressions to prevent pooling of water on the plant service road;
- Construction of approximately 300 feet of concrete curb and gutter along the lake-side of the plant service road that adjoined the west end of Lower Lake;
- Placement of approximately 1400 cubic yards of fill material along the west end of the lake to provide the substrate for a 10 to 15-foot wide vegetated shoreline embankment between the plant service road and Lower Lake;
- Planting 300 trees and shrubs and seeding grass to establish a vegetated shoreline embankment that provides a visual and physical screen between the Asarco plant and Lower Lake;
- Construction of 300 feet of fence to physically separate the Asarco plant area from the vegetated shoreline embankment on the west end of Lower Lake.

Spring 1998 observations indicate that the 1997 enhancements described above have improved the west end of Lower Lake. Demolition, patching, curb and gutter construction and embankment fill activities have created a system maintaining positive drainage away from Lower Lake. Vegetation has established a uniform cover across the embankment. Trees and shrubs are established and growing to provide a visual and physical screen between the Asarco plant and Lower Lake.

1.4 PERFORMANCE OBJECTIVES

Asarco proposes to expand the 1997 enhancement effort to the rest of the Lower Lake shoreline, portions of Upper Lake shoreline, and the area between the two lakes. The improvement of site conditions as part of this SEP will begin following a decision on the applicability of RCRA Corrective Action.

1.4.1 SEP Performance Objectives

This SEP will supplement established native vegetative communities that are developing along the 10 to 15-foot wide perimeter of Lower Lake and portions of the Upper Lake north and west shorelines. This supplementation will be accomplished through:

1. Identifying and improving site conditions that have precluded the establishment of vegetation on barren shorelines of Lower Lake and portions of Upper Lake north and west shorelines;
2. Filling portions of the Lower Lake perimeter to form an irregular shoreline to naturalize the site, create riparian habitat for adapted vegetative communities, expand and enhance wildlife habitat, and potentially improve water quality;
3. Planting vegetative screens along portions of north and west Upper Lake perimeter areas to enhance wildlife habitat and reduce local noise pollution.

Between Upper Lake and Lower Lake, SEP activities will establish a foothills grassland community comparable to native communities in the local area. This will be accomplished by:

1. Re-grading the area between Upper and Lower Lakes to form naturalized topographical contours to enhance upland vegetative and wildlife habitat;
2. Planting vegetative screens along the west side of the area between the lakes to enhance wildlife habitat and reduce local noise and air pollution.

1.4.1.1 Additional Asarco Enhancement Initiatives

In order to integrate the Upper and Lower Lake system for the benefit of vegetation and wildlife and to complement the foothills grassland community, Asarco may institute enhancements that go beyond the scope of the Consent Decree. The enhancements could include:

1. The possible construction of a pipe conveyance directing water from Upper Lake to Lower Lake (across the area between the lakes) to enhance water quality, vegetation, and wildlife habitat;
2. The possible introduction of a native sensitive plant species, lesser rushy milkvetch (*Astragalus convallarius*) at selected upland locations between Upper and Lower Lakes to expand its range and population.

1.5 SCOPE OF WORK

The scope of work for the SEP will expand on enhancements already instituted by Asarco's initiative. The scope of work will detail tasks necessary to achieve the performance objectives outlined in Section 1.4, including additional enhancements that may be instituted at Asarco's initiative. The improvement of site conditions will begin following a decision on the applicability of RCRA Corrective Action. Conceptual designs for SEP enhancements are presented in Figure 1-2 (riparian areas) and Figure 1-3 (upland areas).

1.5.1 Riparian Area Enhancements Scope of Work

1. Baseline riparian vegetation and wildlife measurements will be conducted in conjunction with the implementation of the SEP as part of the Data Collection Plan (Attachment 1). The area will be inspected to identify site conditions that have precluded the establishment of vegetation on barren shoreline locations;

2. Placement of approximately 10,000 cubic yards of fill along portions of the perimeter of Lower Lake to reconfigure the shoreline, naturalize the site, create riparian habitat for vegetation and wildlife, and potentially improve water quality;
3. Site condition improvements include grading up to one acre of Upper and Lower Lake shoreline areas as needed to reduce the slope sufficiently for the growth of vegetation and grading of up to one-half acre of selected locations adjacent to the top of the lake banks to maintain positive drainage away from the lakes;
4. Placement of up to four to six inches of coversoil on up to one acre of shoreline areas to assist the growth and establishment of vegetation;
5. Planting of approximately 300 trees and shrubs and construction of approximately 400 linear feet of fence to screen Asarco plant operations along portions of north and west Upper Lake perimeter areas for the enhancement of wildlife habitat and reduction of local noise pollution;
6. Seeding and planting of approximately one acre of Upper and Lower Lake shorelines to establish sustainable vegetative communities that supplement established communities that have developed along the 10 to 15-foot wide perimeter of Lower Lake and portions of north and west Upper Lake shorelines.
7. The possible installation of a pipe conveyance and control gate between Upper and Lower Lake as an enhancement beyond the scope of the Consent Decree.



SCALE
(In Feet)
0 120

LEGEND

- SHORELINE FILL
(TO BE REVEGETATED)
- TOPSOIL AND GRASS
- WETLAND AND RIPARIAN
VEGETATION
- TREES AND SHRUBS
- NEW FENCE
- EXISTING FENCE

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STATEMENT OF WORK

RIPARIAN AREA ENHANCEMENTS

FIGURE

1-2







1.5.2 Upland Area Enhancement Scope of Work

1. Re-grading and fill, as necessary, to form naturalized topographical contours and enhance upland habitat;
2. Addition of a site cap consisting of a six inch capillary break of crushed limestone covered by 18 inches of suitable coversoil over approximately 4 acres between Upper and Lower Lakes to assist the growth and establishment of vegetation;
3. Planting of approximately 300 trees and shrubs and construction of approximately 400 linear feet of fence to screen Asarco plant operations along the west side of the area between Upper and Lower Lakes for the enhancement of wildlife habitat and reduction of local noise and air pollution;
4. Seeding and planting of approximately four acres between Upper and Lower Lakes to establish a sustainable foothills grassland vegetative community;
5. The possible planting of up to 1000 square feet at selected site locations between Upper and Lower Lakes to establish a sensitive plant species (lesser rushy milkvetch) as an enhancement beyond the scope of the Consent Decree.



SCALE
0 (In Feet) 120

LEGEND

-  EARTH WORK PERFORMED DURING RIPARIAN AREA ENHANCEMENTS (SEE FIG. 1-2)
-  TOPSOIL AND GRASS
-  TREES AND SHRUBS
-  NEW FENCE
-  TREES AND SHRUBS
-  EXISTING FENCE

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SUPPLEMENTAL ENVIRONMENTAL PROJECT
STATEMENT OF WORK

UPLAND AREA ENHANCEMENTS

FIGURE

1-3

2. DESCRIPTION OF DESIGN AND CONSTRUCTION ACTIVITIES

As indicated in Section 1.4, design and construction activities that are necessary to implement the SEP will involve riparian and upland sites. Riparian sites include the shoreline of Lower Lake and parts of the Upper Lake shoreline. Upland activities will be confined to the area between the two lakes.

As part of general construction planning, submission and approval of a Five Year Noxious Weed Management Program is necessary to comply with State of Montana County Noxious Weed Control Act (Title 7, Chapter 22, Sections 7-22-2101 through 7-22-2153) MCA and Rules 4.5.201 through 4.5.204 for activities proposed in this SEP. A SEP Weed Management Plan will be developed for Lewis and Clark County Weed District approval prior to the implementation of the SEP.

A SEP Health and Safety Plan for all project personnel is included in Attachment 2. This plan establishes policies and procedures to protect project personnel from potential hazards posed by field activities associated with this project. The plan provides measures to minimize potential exposure, accidents, and physical injuries that may occur during daily on-site activities and details actions to be taken during a site emergency. The plan complies with provisions of the Occupational Safety and Health Administration standard for personal safety for hazardous waste investigation and remediation personnel as mandated by the Superfund Amendments and Reauthorization Act of 1986 (SARA) (29 CFR 1926.65).

2.1 RIPARIAN AREA ENHANCEMENTS

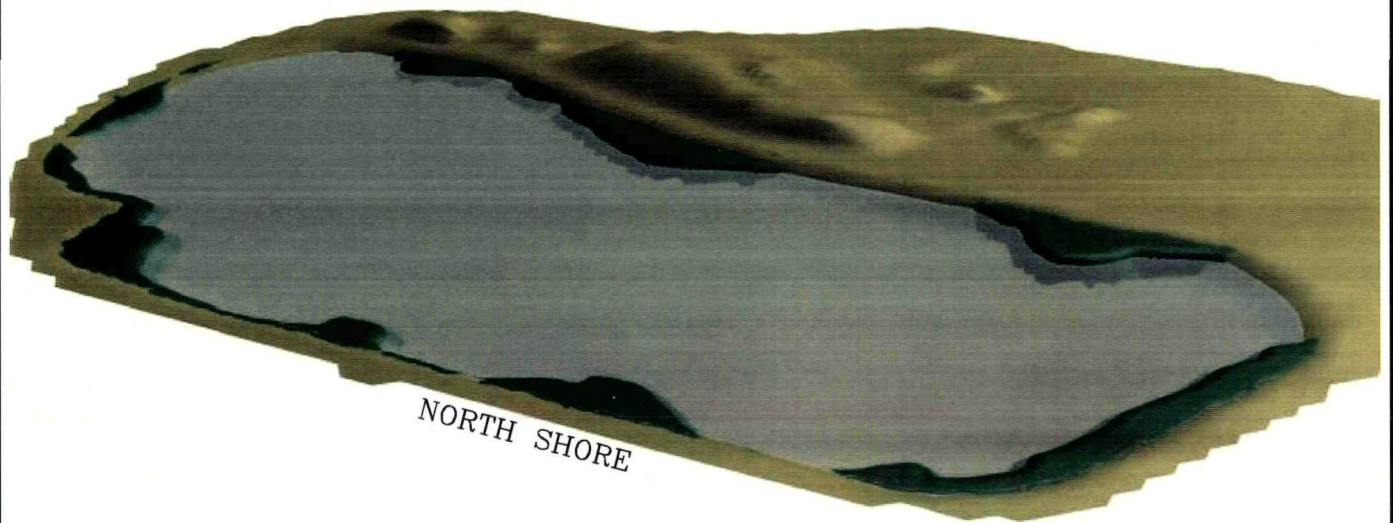
The SEP will supplement established native vegetative communities that are developing along the 10 to 15-foot wide perimeter of Lower Lake and northern portions of the Upper Lake shoreline. This will involve grading and reshaping of the shoreline and capping with suitable coversoil. In addition to supplementation of native vegetation, fill will be added to portions of the Lower Lake perimeter to create an irregular, sinuous shoreline and introduce new riparian and wildlife habitat while potentially improving water quality. A tree and shrub

screen similar to that established along the western shoreline of Lower Lake in 1997 will be planted along a northwestern portion of the Upper Lake shoreline to screen it from traffic and industrial activity associated with the operation of the Asarco plant. As was done at Lower Lake during the 1997 enhancements, a light fence will be constructed along this screen to supplement the vegetative barrier between the plant and Upper Lake.

A gated pipe conveyance between Upper and Lower Lakes (at the southeastern end of the project area) may be built to channel controlled flows of water from Upper Lake to Lower Lake for water quality, vegetation, and wildlife habitat enhancements associated with lake system connection. The construction of this conveyance would exceed requirements of the Consent Decree.

2.1.1 Earthwork and Shoreline Improvements

To ensure the success of revegetation efforts, site conditions that have precluded the establishment of vegetation on barren shoreline locations will be identified. Shoreline bank slopes will be reduced where slopes exceed 3:1 in steepness to allow grasses and other vegetation to be established. Perimeter locations will be graded as necessary to maintain positive drainage away from the lakes. Field stone and gravel will be placed into Lower Lake to contour the lake shoreline, creating shelter and flat shallows for establishment of riparian vegetation (Figure 2-1). Fill for construction of the lake contours will be obtained from the excess excavation materials associated with construction of the 1997 stormwater containment facility. This material, comprising approximately 14,000 cubic yards that passed the Toxic Characteristic Leach Procedure testing, is currently stockpiled southwest of the plant. Shoreline areas will be capped to within 12 to 18 inches of the water line with suitable coversoil, but placement of fill into Upper Lake will be avoided. Coversoil suitability criteria are presented in Table 2-1.



LOWER LAKE WITH SHORELINE IMPROVEMENTS



LOWER LAKE PRIOR TO SHORELINE IMPROVEMENTS

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SUPPLEMENTAL ENVIRONMENTAL PROJECT
STATEMENT OF WORK

**EARTHWORK AND SHORELINE
IMPROVEMENTS ON LOWER LAKE**

FIGURE

2-1



TABLE 2-1. COVERSOIL SUITABILITY CRITERIA

Parameter	Suitable Standard
pH	5.5 - 8.5
Electrical Conductivity	< 4 mmhos / cm
Sodium Adsorption Ratio	< 12
Acid-Base Potential	> -5 T / 1000T
C:N Ratio	< 20 : 1
Soil N	> 15 ug NO ₃ -N / g
Soil P	> 10 ug P / g (Bray extraction)
Soil K	> 75 ug K / g
Organic Matter	1 - 10 %
Saturation %	20 - 80 %
% Coarse Fragment Content	< 20 %
Texture	Loam Silt loam (sand > 15 %) Silty clay loam (clay < 35 %, sand > 15 %) Clay loam (clay < 35 %) Sandy clay loam Sandy loam

2.1.2 Revegetation of Shoreline Areas

The focus of revegetation efforts will be to supplement established native vegetative communities that have developed along the 10 to 15-foot wide perimeter of Lower Lake and parts of Upper Lake north and west shorelines. Revegetation will result in the establishment of sustainable vegetative communities that are comparable to adjacent, undisturbed communities in the Upper Lake area. A preliminary inspection of the area in January 1997 (Hydrometrics, 1997a) identified riparian habitats that may be used as a reference area for revegetation planning and success quantification. Habitats and vegetation species observed during the preliminary inspection are listed in Table 2-2.

**TABLE 2-2. RIPARIAN HABITATS AND VEGETATION SPECIES OBSERVED IN
THE UPPER LAKE AREA, JANUARY 1997**

Scrub-Shrub Wetland	
Willow	<i>Salix spp.</i>
Alder	<i>Alnus spp.</i>
Red-twig dogwood	<i>Cornus stolonifera</i>
Reed canary grass	<i>Phalaris arundinacea</i>
Western wheatgrass	<i>Agropyron smithii</i>

Emergent Wetland	
Cattail	<i>Typha latifolia</i>
Reed canary grass	<i>Phalaris arundinacea</i>
Giant wildrye	<i>Elymus cinereus</i>

Mesic Shrub	
Willow	<i>Salix spp.</i>
Alder	<i>Alnus spp.</i>
Russian Olive	<i>Elaeagnus angustifolia</i>
Boxelder	<i>Acer negundo</i>
Woods rose	<i>Rosa woodsii</i>
Red-twig dogwood	<i>Cornus stolonifera</i>
Western wheatgrass	<i>Agropyron smithii</i>

To ensure revegetation success and ecosystem continuity, selected Upper Lake riparian vegetation communities will be utilized as sources for native vegetative transplants (cuttings and live clumps) to SEP locations at Upper and Lower Lake shoreline sites. These transplants will be collected on a low-density, dispersed basis (minimum of 15 feet between collections) throughout accessible portions of the Upper Lake area. Sites that are disturbed by these collection activities will be graded and seeded with annual rye and western wheatgrass. These grasses will provide interim cover for natural regeneration. These small collection sites will be monitored through the first growing season for cover establishment and noxious weed invasion. Establishment of native vegetation on remaining shoreline areas will be accomplished through seeding and transplanting using commercial Montana seed/nursery sources. Non-native and naturalized plant species will not be utilized in SEP revegetation. To increase diversity and further enhance wildlife habitat, native plant species listed in Table 2-3 may be used along Upper and Lower Lake shorelines.

**TABLE 2-3. ADDITIONAL NATIVE PLANT SPECIES PROPOSED FOR
ESTABLISHMENT IN UPPER AND LOWER LAKE RIPARIAN HABITATS**

Scrub-Shrub Wetland	
Black cottonwood	<i>Populus trichocarpa</i>
Douglas hawthorn	<i>Crataegus douglasii</i>
Tufted hairgrass	<i>Deschampsia caespitosa</i>
Emergent Wetland	
Sedge	<i>Carex spp.</i>
Rush	<i>Juncus spp.</i>
Bulrush	<i>Scirpus spp.</i>
Arrowhead	<i>Sagittaria spp.</i>
Mesic Shrub	
Snowberry	<i>Symphoricarpos albus</i>
Serviceberry	<i>Amelanchier alnifolia</i>
Douglas hawthorn	<i>Crataegus douglasii</i>
Tufted hairgrass	<i>Deschampsia caespitosa</i>

Attachment 1 to this SOW includes a data collection plan which addresses the methodology to be used for collecting data from the established riparian area that will serve as a control for setting revegetation goals for species and cover. It also contains the methodology for collecting data from the project area that will be used for determining the success of project revegetation efforts.

2.1.3 Site Water Control Improvements

In the summer of 1997, drainage improvements exceeding those proposed in the SEP were instituted by ASARCO in order to enhance the west side of Lower Lake. An integral concrete curb and gutter was installed on the lake-side of the plant service road to maintain positive drainage away from Lower Lake. Drainage improvements also consisted of placing fill along the lake to raise the grade, the demolition of two abandoned drain pipe outlets, and the removal and replacement of a portion of the plant service road pavement where depressions had developed. Additional work, consisting of minor filling and grading along

sections of Upper and Lower Lake shorelines, will help ensure the maintenance of positive drainage away from the lakes.

Asarco suspects water that seeps into Lower Lake through the soil barrier that separates it from Upper Lake of contributing to water quality problems in Lower Lake. Construction of a gated 12 to 24-inch pipe conveyance, introducing a controlled, one-way flow of water from Upper Lake, would equalize the levels of the two lakes to some extent. The resulting reduction in hydraulic gradient between the two lakes would reduce the quantity of water entering Lower Lake through this soil barrier. Although the elevation difference between the two lakes is only a matter of a couple feet, any reduction of the gradient would be beneficial to the quality of water in Lower Lake. In addition, direct connection created by this conveyance would enhance the exchange of aquatic life and vegetative propagules. The conveyance, if built, would be located at the southeastern end of the project area between Upper and Lower Lake (see Figure 1-2). This enhancement, beyond the scope of the Consent Decree, may or may not be constructed, pending further investigation of potential environmental and discharge permit impacts.

2.1.4 Visual and Physical Screen

Following the placement of fill along the west end of Lower Lake in 1997, a screen of trees and shrubs was planted along the entire west end of the lake as part of site enhancements instituted by Asarco. A light woven wire fence was erected between the curb and the trees to protect the plantings until they have a chance to mature. Similar plantings (grass, 300 trees and shrubs) and fencing (400 feet) will be located along the northwestern end of Upper Lake to visually and physically screen the lake from the traffic and industrial activity associated with the operation of the Asarco plant.

2.2 UPLAND AREA ENHANCEMENTS

The area between Upper and Lower Lakes contains stockpiled soils. As appropriate, any contaminated soils in this area will be removed as part of the RCRA Corrective Action. The

SEP will establish an upland vegetative community in the area between Upper and Lower Lakes. This will involve capping the area with a six inch capillary break of crushed limestone and 18 inches of suitable coversoil (see Table 2-1) prior to revegetation with grasses, trees, and shrubs. Revegetation activities may include the introduction of a sensitive plant species (lesser rushy milkvetch) at selected site locations to expand the range and population of this species. Trees and shrubs will be added to enhance the quality of the upland habitat and to screen it from the Asarco plant area.

2.2.1 Earthwork and Upland Improvements

Following a decision on the applicability of RCRA Corrective Action, the area between the lakes will be covered with a six inch crushed limestone capillary break and 18 inches of suitable coversoil (see Table 2-1 for suitability criteria). The site will then be further graded to complete a variable, naturalized topography that enhances upland habitat for vegetation and wildlife between Upper and Lower Lake.

2.2.2 Revegetation of Upland Areas

Revegetation of the area between the lakes will create a foothill grassland community comparable to established communities of this type in the East Helena area. Blending of this upland area into the planned Upper and Lower Lake riparian communities will create wildlife habitat opportunities. A preliminary inspection of the area in January 1997 (Hydrometrics, 1997a) identified occurrences of upland habitat that could be used as reference areas for revegetation planning and success quantification. This habitat, and vegetation species observed at several locations during the preliminary inspection, are listed in Table 2-4.

**TABLE 2-4. UPLAND HABITAT AND VEGETATION SPECIES OBSERVED IN
THE EAST HELENA AREA, JANUARY 1997**

Foothill Grassland	
Russian Olive	<i>Elaeagnus angustifolia</i>
Boxelder	<i>Acer negundo</i>
Rocky Mountain juniper	<i>Juniperus scopulorum</i>
Bluebunch wheatgrass	<i>Pseudoroegneria spicata</i>
Thickspike wheatgrass	<i>Agropyron dasystachyum</i>
Blue grama	<i>Bouteloua gracilis</i>
Idaho fescue	<i>Festuca idahoensis</i>
Needle-and-thread grass	<i>Stipa comata</i>
Sunflower	<i>Helianthus annuus</i>
Yarrow	<i>Achillea millefolium</i>

Revegetation of the area between the lakes will be accomplished through native seeding and transplanting using commercial Montana seed/nursery sources. Non-native and naturalized plant species will not be utilized in SEP revegetation. Additional native plant species are proposed for introduction to the area community in order to increase diversity and further enhance wildlife habitat. Native species under preliminary consideration are listed in Table 2-5.

**TABLE 2-5. ADDITIONAL NATIVE PLANT SPECIES PROPOSED FOR UPLAND
HABITAT ESTABLISHMENT IN THE AREA BETWEEN UPPER AND LOWER
LAKES**

Foothill Grassland	
Rough fescue	<i>Festuca scabrella</i>
Sandberg bluegrass	<i>Poa sandbergii</i>
Prairie coneflower	<i>Ratibida columnifera</i>
Lesser rushy milkvetch	<i>Astragalus convallarius</i>

The introduction of lesser rushy milkvetch would serve to expand the range and population of this species in the East Helena valley to which it is endemic. Lesser rushy milkvetch is

classified by the Montana Natural Heritage Program (Lesica and Shelly, 1991) as a sensitive species. This plant has no statutory federal or state protection (Lesica and Shelly, 1991). Establishment of a population of lesser rushy milkvetch would be conducted as a trial introduction, pending input from appropriate resource organizations (state/federal agencies, the Montana Natural Heritage Program and the Montana Native Plant Society) and the successful location/propagation of this species.

Attachment 1 to this SOW includes a data collection plan which addresses the methodology to be used for collecting data from the established upland area that will serve as a control for setting revegetation goals for species and cover. It also contains the methodology for collecting data from the project area that will be used for determining the success of project revegetation efforts.

2.2.3 Visual and Physical Screen

A row of 300 trees and shrubs will be planted to connect the existing tree and shrub screen planted along the west end of Lower Lake with the tree and shrub screen planned for installation along the northwest corner of Upper Lake. The area will also be seeded to grass. The completion of this planting will result in a continuous row of trees and shrubs screening the lakes and the area between them from traffic and industrial activity associated with the operation of the Asarco plant.

3. METHODOLOGY FOR DETERMINING SUCCESS OF PROJECT

Attachment 1 to this SOW details a data collection plan addressing the methodology to be used for collecting data from established vegetative communities that will serve as a control for setting revegetation goals for species and cover. It also contains the methodology for collecting data from the project area that will be used for determining the success of project revegetation and wildlife habitat improvements.

Prior to the implementation of any activities that disturb SEP sites, baseline vegetation and wildlife measurements will be collected. Revegetation areas and riparian and upland inspection sites identified in January 1997 (Hydrometrics, 1997a) will be revisited during the growing season to record baseline vegetation (species and cover) and wildlife data. Vegetation reference areas will be delineated in the areas of riparian and upland inspection sites identified in January 1997. Revegetation areas will be compared to their respective reference location (riparian or upland) on an annual basis until 70 percent or greater of native reference area vegetation species and cover is observed for two consecutive growing seasons, at which time the SEP areas will be considered successfully revegetated.

The relatively small scale of this project precludes the institution of statistically-valid measurements that could quantify wildlife population increases resulting from the proposed site habitat improvements. Alternatively, transect measurements of wildlife diversity across shoreline areas to be revegetated and adjacent reference areas will be compared. These measurements will be performed on a semi-annual basis following SEP implementation until revegetation success criteria are met.

4. MONITORING AND REPORTING

Baseline vegetation and wildlife measurements will be conducted in conjunction with the implementation of the SEP. Plans for the collection of vegetation and wildlife data are presented in Attachment 1. Final grade site soils will be sampled for an assessment of standard reclamation parameters (pH, nitrate, sodium, sulfate, conductivity, texture, lime, potassium, organic matter, and available phosphorous) and metals levels (including plant available arsenic, cadmium, copper, lead, and zinc).

A report detailing baseline riparian and upland conditions will be submitted to EPA within 30 days of SEP implementation. Following SEP implementation, annual reports summarizing SEP Lower Lake water quality, vegetation, wildlife, and final grade site soils sampling and monitoring will be submitted to EPA.

A SEP Completion Report will be submitted to EPA within 60 days after it is determined that SEP activities are completed. The SEP Completion Report will contain the following information:

1. A description of the SEP as fully implemented;
2. A description of the environmental benefits resulting from SEP implementation;
3. Itemized and total net costs of the SEP;
4. A certification that the SEP has been fully implemented pursuant to the provisions of the Consent Decree and the SOW.

5. PROJECT SCHEDULE

Detailed SEP project schedules are dependent on regulatory review, activity authorizations by Asarco, the completion of RCRA Corrective Action, and the limits of Montana's construction season (April through October). SEP activities cannot begin until after soil removals, as appropriate, are approved and completed as part of the RCRA Corrective Action. A tentative schedule for SEP activities is presented in Table 5-1.

TABLE 5-1. SUPPLEMENTAL ENVIRONMENTAL PROJECT SCHEDULE

Milestone	Date
Effective Date of Consent Decree	May 5, 1998
Submit SOW for EPA approval	June 30, 1998
EPA Comments on SOW	October 28, 1998
Submit Asarco Responses to EPA Comments and Revised SOW to EPA	December 21, 1998
Activities Under RCRA Corrective Action	1999 - 2000*
Revise SEP to Integrate it With RCRA Corrective Action	1999*
Conduct Baseline Vegetation and Wildlife Measurements	May - October, 1999*
Submit SEP Weed Management Plan for County Approval	March, 2001*
Implementation of SEP	April, 2001*
Submit Baseline Conditions Report to EPA	May, 2001*
Submit Annual SEP Summary	December, 2001*
Submit Annual SEP Summary	December, 2002
Submit Annual SEP Summary	December, 2003
Submit SEP Completion Report	With 60 days following completion of SEP.
EPA Comments to SEP Completion Report	Within 60 days after SEP Completion Report is delivered.
Submit Revised SEP Completion Report	Within 30 days after receipt of EPA's written comments.

NOTES:

* Contingent upon final decision on applicability of RCRA Corrective Action.

6. REFERENCES

- Hydrometrics. 1997a. Vegetation Habitats and Species Observed Near the Site of the Asarco East Helena Plant. Memo to File. January, 1997.
- Hydrometrics. 1997b. Proposed Supplemental Environmental Project (SEP) for the Asarco East Helena Plant. Prepared for ASARCO Incorporated, February, 1997.
- Lesica, P. and J.S. Shelly. 1991. Sensitive, Threatened and Endangered Vascular Plants of Montana. Montana Natural Heritage Program. Occasional Publication Number 1, April, 1991.
- Montana. County Noxious Weed Control Act. 1991. Title 7, Chapter 22, Sections 7-22-2101 through 7-22-2153 MCA and Rules 4.5.201 through 4.5.204. Agricultural and Biological Sciences Division, Montana Department of Agriculture, Helena, Montana.
- United States District Court for the District of Montana. 1998. Consent Decree, Civil Action No. CV 98-3-H-CCL. January 23, 1998.

ATTACHMENT 1
DATA COLLECTION PLAN

DATA COLLECTION PLAN
FOR THE
EAST HELENA SUPPLEMENTAL ENVIRONMENTAL PROJECT
CONSENT DECREE CIVIL ACTION NO. CV 98-3-H-CCL

- DRAFT -

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December 1998

DATA COLLECTION PLAN
FOR THE
EAST HELENA SUPPLEMENTAL ENVIRONMENTAL PROJECT
CONSENT DECREE CIVIL ACTION NO. CV 98-3-H-CCL

1. RIPARIAN VEGETATION

The SEP will supplement established native riparian communities that are developing along the 10 to 15-foot wide perimeter of Lower Lake and portions of Upper Lake north and west shorelines. The focus of revegetation efforts will be to establish vegetative communities that are comparable to established riparian communities in the Upper Lake area. Upper and Lower Lake shoreline areas revegetated as part of SEP enhancements will be compared to an Upper Lake reference area during the growing season on an annual basis. When 70 percent or greater of native reference area species and cover is observed for two consecutive growing seasons, the shoreline SEP areas will be considered successfully revegetated.

1.1 REFERENCE AREA

Prior to the implementation of any activities that disturb SEP sites, Upper Lake riparian sites identified in January 1997 (Hydrometrics, 1997a) will be revisited during the growing season to record baseline species and cover data. A vegetation reference area will be delineated as a permanent 100-foot transect. Baseline and subsequent annual species and cover data will be collected at ten random quadrat (0.25 m² rectangular) locations along the transect. Data will be reduced and analyzed at Hydrometrics' Helena, Montana office.

1.1.1 Species

Plant species will be identified and recorded at each quadrat. Species observed in 20 percent of quadrats or less will be classified as incidental and excluded from reference area listing. Subsequent data reduction will produce a species list for comparison with project area results.

1.1.2 Cover

Plant cover by individual species will be recorded at each quadrat. This data will be subsequently reduced for comparison of total vegetative cover with project area results.

1.2 PROJECT AREA

Prior to the implementation of any activities that disturb SEP sites, shoreline revegetation areas will be visited during the growing season to measure baseline species and cover data. These and subsequent annual measurements of species and cover will be collected at ten random quadrat (0.25 m² rectangular) locations along one shoreline transect at Upper Lake and one shoreline transect at Lower Lake. Each lake transect will extend the length of the revegetated shoreline. Data will be reduced for comparison with reference area data at Hydrometrics', Helena, Montana office.

1.2.1 Species

Plant species will be identified and recorded at each quadrat. Species observed in 20 percent of quadrats or less will be classified as incidental and excluded from project area listing. Subsequent data reduction will produce a species list for comparison with reference area results.

1.2.2 Cover

Plant cover by individual species will be recorded at each quadrat. This data will be subsequently reduced for comparison of total vegetative cover with reference area results.

2. UPLAND VEGETATION

SEP revegetation activities in the area between Upper and Lower Lakes will create a foothill grassland community comparable to established native communities of this type in the East Helena area. The upland area revegetated as part of SEP enhancements will be compared to an upland reference area near the facility during the growing season on an annual basis. When 70 percent or greater of native reference area species and cover is observed for two consecutive growing seasons, the upland SEP area will be considered successfully revegetated.

2.1 REFERENCE AREA

Prior to the implementation of any activities that disturb SEP sites, upland sites identified in January 1997 (Hydrometrics, 1997a) will be revisited during the growing season to record baseline species and cover data. A vegetation reference area will be delineated as a permanent 100-foot transect. Baseline and subsequent annual species and cover data will be collected at ten random quadrat (0.25 m² rectangular) locations along the transect. Data will be reduced and analyzed at Hydrometrics', Helena, Montana office.

2.1.1 Species

Plant species will be identified and recorded at each quadrat. Species observed in 20 percent of quadrats or less will be classified as incidental and excluded from reference area listing. Subsequent data reduction will produce a species list for comparison with project area results.

2.1.2 Cover

Plant cover by individual species will be recorded at each quadrat. This data will be subsequently reduced for comparison of total vegetative cover with project area results.

2.2 PROJECT AREA

Prior to the implementation of any activities that disturb SEP sites, upland revegetation areas between the lakes will be visited during the growing season to measure baseline species and

cover data. These and subsequent annual measurements of species and cover will be collected at ten random quadrat (0.25 m² rectangular) locations along a 100-foot transect across the project area. A permanent 100-foot transect will be established across the project area when final grading is completed. Data will be reduced for comparison with reference area data at Hydrometrics' Helena, Montana office.

2.2.1 Species

Plant species will be identified and recorded at each quadrat. Species observed in 20 percent of quadrats or less will be classified as incidental and excluded from project area listing. Subsequent data reduction will produce a species list for comparison with reference area results.

2.2.2 Cover

Plant cover by individual species will be recorded at each quadrat. This data will be subsequently reduced for comparison of total vegetative cover with reference area results.

3. TERRESTRIAL WILDLIFE

The small scale of the proposed project precludes the institution of statistically valid measurements that could quantify changes in wildlife populations resulting from the proposed site improvements. Therefore, changes in wildlife use of the sites that may occur as a result of site improvements will be qualitatively assessed.

3.1 REFERENCE AREA

Prior to the implementation of any activities that disturb SEP sites, three transects will be established in reference areas similar to those scheduled for restoration. Each transect will be surveyed once in spring and fall for baseline wildlife data. Information collected will include: a) notes and photographs describing the habitat within the project area on each transect; b) wildlife species recorded by sightings or evidence (tracks, scats, etc.) within the project area on each transect; c) notes and photographs describing the habitat adjacent to the project area on each transect; and d) wildlife species recorded by sightings or evidence (tracks, scats, etc.) adjacent to the project area on each transect. For the purposes of this assessment, the transects examined in a) and b) will be approximately two meters wide.

3.2 PROJECT AREA

Prior to the implementation of any activities that disturb SEP sites, each transect will be surveyed once in spring and fall for baseline wildlife data. Three transects will be established in areas scheduled for SEP enhancement. These transects will include the entire shoreline of Lower Lake, portions of the shoreline of Upper Lake scheduled for improvements, and the upland site between Upper and Lower Lakes.

These semi-annual surveys will continue at the respective sites following SEP implementation, proceeding until SEP completion. Information collected will include: a) notes and photographs describing the habitat within the project area on each transect; b) wildlife species recorded by sightings or evidence (tracks, scats, etc.) within the project area on each transect; c) notes and photographs describing the habitat adjacent to the project area

on each transect; and d) wildlife species recorded by sightings or evidence (tracks, scats, etc.) adjacent to the project area on each transect. This latter category would include all species visible anywhere within the Upper and Lower Lakes vicinity from the transects and would provide a list of species that could therefore potentially use the project areas. For the purposes of this assessment, the transects examined in a) and b) will be approximately two meters wide.

Data will be reported as species diversity observed by season (spring and fall) and by transect vs. adjacent areas. Because the project areas to be assessed are relatively narrow and/or small, differences in species diversity between treated and untreated areas are expected to be small. However, as the site matures, some changes may become evident.

ATTACHMENT 2

HEALTH AND SAFETY PLAN

